

**WHAT IS CLAIMED IS:**

1. A continuously adjustable illuminating apparatus, comprising:
  - a base having a through hole;
  - a light source movably passing through the through hole to emit light rays;
  - 5 a reflector surrounding the base and mounted to the base to collect the light rays and reflect the light rays for output; and
  - a continuously adjustable mechanism for continuously moving the light source so as to continuously adjust a relative position between the light source and the reflector.
- 10 2. The continuously adjustable illuminating apparatus according to claim 1, wherein the continuously adjustable mechanism comprises:
  - a cam driven to rotate and to move the light source.
3. The continuously adjustable illuminating apparatus according to claim 2, wherein the continuously adjustable mechanism further comprises:
  - 15 a motor for driving the cam to rotate.
4. The continuously adjustable illuminating apparatus according to claim 2, wherein the continuously adjustable mechanism further comprises:
  - a gear set for driving the cam to rotate; and
  - a motor for driving the gear set.

5. The continuously adjustable illuminating apparatus according to claim 4,  
wherein the gear set comprises:

a worm shaft driven by the motor; and

a worm wheel driven by the worm shaft.

5 6. The continuously adjustable illuminating apparatus according to claim 2,  
wherein the light source has a follower in contact with the cam.

7. The continuously adjustable illuminating apparatus according to claim 6,  
further comprising a spring, the light source partially passing through the spring,  
wherein the spring has a first end in contact with the base, and a second end in  
10 contact with the follower.

8. The continuously adjustable illuminating apparatus according to claim 1,  
wherein the continuously adjustable mechanism comprises:

a nut fixed to the base;

15 a screw rod fitted into the nut, the screw rod being driven to rotate and to  
move the light source accordingly; and

a motor for driving the screw rod to rotate.

9. The continuously adjustable illuminating apparatus according to claim 1,  
wherein the continuously adjustable mechanism comprises:

a rack fixed to the light source;

a pinion engaging with the rack, the pinion being driven to rotate and to move the light source accordingly; and  
a motor for driving the pinion to rotate.